

1. A method for exchanging a used fluid with a fresh fluid in a vehicle having an automatic transmission connected to a fluid circuit, said used fluid initially being contained within said transmission and said fluid circuit, at least a substantial portion of which is subsequently discharged into a receptacle, said fresh fluid initially being contained in a source container, said method comprising the steps of:

providing a fluid exchange system having a first conduit for communicating fluid from the transmission, a second conduit for communicating fluid to the transmission, and a bypass conduit for selectively communicating fluid between the first conduit to the second conduit;

coupling the first and second conduits of the fluid exchange system into an accessed fluid circuit;

establishing a first bypass condition by selectively coupling said bypass conduit between the first and second conduits so that used fluid from the fluid circuit is received into the first conduit and is passed through the bypass conduit and into the second conduit whereby used fluid is reintroduced into the accessed fluid circuit; and

establishing a second exchange condition by selectively uncoupling the bypass conduit between the first and second conduits so that used fluid from the fluid circuit is received into the first conduit and fresh fluid is received into the second conduit and introduced into the accessed fluid circuit.

2. A fluid exchange system for use in exchanging a used fluid with a fresh fluid in a vehicle having an automatic transmission and a fluid cooling circuit, said automatic transmission having an internal fluid pump to conduct a circulated fluid in the fluid cooling circuit, said fresh fluid being contained in and dispensed from a source external to said vehicle, said used fluid initially being contained within said vehicle and discharged into a receptacle external to said vehicle, said fluid exchange system comprising:

a first fluid line intercoupled to the fluid exchange system and the fluid cooling circuit to conduct fluid from the cooling circuit;

a second fluid line intercoupled to the fluid exchange system, the source, and the fluid cooling circuit to conduct fluid into the cooling circuit;

a bypass fluid line intercoupled between the first fluid line and the second fluid line; and

a selectively controllable bypass fluid line valve for controlling fluid communication between the first and second fluid lines, said valve defining a pair of operational conditions including: a first operational condition wherein used fluid is received into the first fluid line, passed through the bypass fluid line, passed into the second fluid line, and reintroduced into the cooling circuit, and a second operational condition wherein used fluid is received into the first fluid line and fresh fluid is received into the second fluid line and introduced into the cooling circuit.

3. A method for exchanging a used fluid with a fresh fluid in a vehicle having an automatic transmission, said used fluid initially being contained within said transmission, at least a substantial portion of which is subsequently discharged into a receptacle, said fresh fluid initially being contained in a source container, said method comprising the steps of:

identifying a transmission cooling circuit on the vehicle;

uncoupling a portion of the transmission cooling circuit to provide access to a first transmission cooling circuit port and a second transmission cooling circuit port, one of said transmission cooling line ports directing used transmission fluid outwardly under pressure from the automatic transmission;

providing a fluid exchange system having a first conduit, a second conduit, and a bypass conduit providing selective fluid communication between the first and second conduits;

coupling said first and second conduits of the fluid exchange system to the first and second transmission cooling circuit ports;

providing fluid communication between the first and second conduits via the bypass conduit;

energizing the transmission to flow used fluid through the first conduit, the bypass conduit, and the second conduit,

selectively blocking fluid communication between the first and second conduits via the bypass conduit; and

flowing used fluid into the first conduit and flowing fresh fluid into the second conduit during an exchange procedure.

4. A fluid exchange system for performing a fluid exchange procedure on an automatic transmission of a vehicle, said fluid exchange system comprising:

a first conduit for communicating fluid from the transmission;
a second conduit for communicating fluid to the transmission; and
a bypass conduit for selectively communicating fluid between the first conduit and the second conduit, wherein the first conduit and the second conduit are coupled into an accessed fluid circuit of the vehicle; and wherein a bypass mode of operation is established by selectively coupling said bypass conduit between the first and second conduits so that used fluid from the fluid circuit is received into first conduit, passed through the bypass conduit, and into the second conduit so that used fluid is reintroduced into the accessed fluid circuit; and wherein an exchange mode of operation is established by selectively uncoupling the bypass conduit between the first and second conduits so that used fluid from the fluid circuit is received into the first conduit and fresh fluid is received into the second conduit and introduced into the accessed fluid circuit.

5. A fluid exchange system of claim 4 further comprising a fresh fluid receptacle and a used fluid receptacle, at least one of the receptacles being removable from the exchange system for refilling or emptying purposes.

6. A fluid exchange system for use in exchanging a used fluid with a fresh fluid in a vehicle having an automatic transmission and a fluid cooling circuit operatively connected to conduct a circulated fluid therein, said fresh fluid being contained in and dispensed from a source external to said vehicle, said used fluid initially being contained within said vehicle and discharged into a receptacle external to said vehicle, said fluid exchange system comprising;

a first fluid line intercoupled to the fluid exchange system, the source, and the fluid cooling circuit to conduct fresh fluid from the source into the fluid cooling circuit, said conducted fresh fluid having a first fluid flow rate;

a second fluid line intercoupled to the fluid exchange system and the fluid cooling circuit to conduct used fluid from the cooling circuit, said used fluid having a second fluid flow rate;

a pump operatively coupled to the second fluid line for assisting in an extraction of used fluid from the cooling circuit; and

a control device operatively coupled to the first fluid line or the second fluid line to substantially balance the first fluid flow rate with the second fluid flow rate during an exchange procedure.

7. A fluid exchange system of claim 6 further comprising a fresh fluid receptacle and a used fluid receptacle, at least one of the receptacles being removable from the exchange system for refilling or emptying purposes.

8. A method for exchanging a used fluid with a fresh fluid in a vehicle having a transmission connected to a fluid circuit for conducting a circulated fluid therein in an operational direction, said used fluid initially being contained within said transmission and said fluid circuit, at least a substantial portion of which is subsequently discharged into a receptacle, said fresh fluid initially being contained in a source container, said method comprising the steps of:

providing a fluid exchange system having a first conduit for communicating fresh fluid to the transmission and a second conduit for communicating used fluid from the transmission, said fluid exchange system having a fluid flow alignment valve;

determining the direction of flow of the circulated fluid within the fluid circuit;

operating said fluid flow alignment valve to align the flow of the fresh fluid relative to the flow of the circulated fluid within the fluid circuit; and

delivering a quantity of the fresh fluid sufficient to substantially replace the used fluid within the transmission and the fluid circuit from the source container into the transmission and the fluid circuit within the vehicle as the used fluid is expelled from the transmission and the

fluid circuit into the receptacle at substantially equivalent volumetric flow rates.

9. A method for using a fluid exchange system for exchanging a used fluid with a fresh fluid in a vehicle having an automatic transmission and a fluid cooling circuit operatively connected to conduct a circulated fluid therein, said transmission having a dipstick filler tube, said fresh fluid being contained in and dispensed from a source external to said vehicle, said used fluid initially being contained within said vehicle and discharged into a receptacle external to said vehicle, said method comprising the steps of:

providing a first fluid line fluidly coupling the fluid exchange system, the source, the fluid cooling circuit, and transmission dipstick filler tube to conduct fresh fluid from the source into both the fluid cooling circuit and the dipstick filler tube, said conducted fresh fluid having a first fluid flow rate,

providing a second fluid line interconnected to the fluid exchange system and the vehicle to conduct the used fluid from the vehicle, said used fluid having a second fluid flow rate; and

providing a control assembly operatively coupled to the first fluid line or the second fluid line to substantially balance the first fluid flow rate with the second fluid flow rate during an exchange procedure.

10. In a machine for exchanging used fluid from an automotive automatic transmission with fresh fluid, said machine comprising:

- a source of fresh fluid;
- a pump unit flowing fresh fluid from the source to the automatic transmission; and
- a flow alignment valve including four fluid ports, each of said four ports being in direct fluid flow communication with at least one other of said four ports, two of said ports being bi-directional ports which may receive used fluid from the transmission or send fresh fluid to said transmission, and a different two of said ports being respectively an inflow port at which said machine receives used fluid from the transmission and an outflow port to which the machine

delivers new fluid.

11. The machine of claim 10 wherein the flow alignment valve includes a single valve body and each of said four ports being in direct fluid flow communication with only one other of said four ports.

12. The machine of claim 10 wherein the flow alignment valve is manually biased by an operator during an exchange procedure.

13. The machine of claim 10 wherein the flow alignment valve is controlled by an electronic control system.

14. A machine of claim 10 further comprising a fresh fluid receptacle and a used fluid receptacle, at least one of the receptacles being removable from the machine for refilling or emptying purposes.

15. A method of exchanging used fluid with a fresh fluid in an automotive automatic transmission having an internal pump and an external fluid circulation loop, said method comprising steps of:

providing a volume of fresh fluid;
providing a pump unit flowing fresh fluid from a source to the automatic transmission;
and
providing a flow alignment valve including four fluid ports, each of said four ports being in direct fluid flow communication with at least one other of said four ports, two of said ports being bi-directional ports which may receive used fluid from the transmission or send fresh fluid to said transmission, and a different two of said ports being respectively an inflow port at which said machine receives used fluid from the transmission and an outflow port to which the machine delivers new fluid.

16. The method of claim 15 wherein the flow alignment valve includes a single valve body and

each of said four ports being in direct fluid flow communication with only one other of said four ports.

17 The method of claim 15 wherein the valve is manually biased by an operator during an exchange procedure.

18. The method of claim 15 wherein the valve is controlled by an electronic control system.

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